Volume

Name _____

GEOMETRY

NO WORK = NO CREDIT

DO YOUR FIGURING HERE.

1. A formula for the volume V of a sphere with radius r is $V = \frac{4}{3}\pi r^3$. If the radius of a spherical rubber ball is $1\frac{1}{4}$ inches, what is its volume to the nearest cubic inch?

A. 5
B. 7
C. 8
D. 16
E. 65

2. After excavating a lot, workers removed an estimated 7,000 cubic yards of dirt from the area. If this dirt were spread in an even layer over an empty lot with dimensions 30 yards by 64 yards, about how deep, in yards, would the layer of dirt be?

A. Less than 1
B. Between 1 and 2
C. Between 2 and 3
D. Between 3 and 4
E. More than 4

3. What is the volume, in cubic inches, of a cube whose edges each measure 5 inches in length?

F. 15
G. 25
H. 50
J. 125
K. 500

4. If the volume of a cube is 64, what is the shortest distance from the center of the cube to the base of the cube?

A. 2
B. 4
C. $2\sqrt{4}$
D. $\sqrt{32}$
E. 16

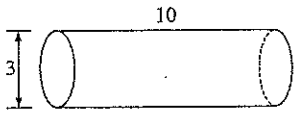
Name _____

GEOMETRY

NO WORK = NO CREDIT

DO YOUR FIGURING HERE.

5. A formula for the volume, V, of a right circular cylinder is $V = \pi r^2 h$, where r is the radius and h is the height. If a tanker truck has a tank as shown below with a diameter of 3 meters and a length of 10 meters and is filled with water, then the weight, in pounds, of the water cargo is: (Note: 1 cubic meter of water weighs approximately 2,205 pounds.)



F. less than 75,000.
G. between 125,000 and 175,000.
H. between 175,000 and 225,000.
J. between 225,000 and 275,000.
K. more than 275,000.

6. If the volume of a cube is 64, what is the shortest distance from the center of the cube to the base of the cube?

A. 2
B. 4
C. $2\sqrt{4}$
D. $\sqrt{32}$
E. 16

Triangles

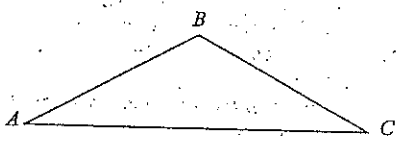
Name _____

GEOMETRY

NO WORK = NO CREDIT

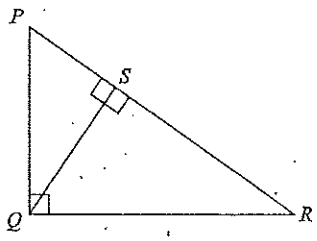
1. In triangle ABC below, the measure of angle A is 20° and the measure of angle B is 3 times larger than the measure of angle C. What is the measure of angle B?

DO YOUR FIGURING HERE.



A. 40°
B. 60°
C. 80°
D. 120°
E. 160°

2 I. In the figure below, triangles PQR, PSQ, and QSR are right triangles. If the measure of angle P is 55°, what is the measure of angle R?



F. 35°
G. 45°
H. 55°
J. 65°
I. 75°

3 The ratio of the side lengths for a triangle is exactly 15:14:12. In a second triangle similar to the first, the longest side is 10 inches long. To the nearest tenth of an inch, what is the length of the shortest side of the second triangle?

A. 6.4
B. 8.0
C. 9.3
D. 12.0
E. Cannot be determined from the given information

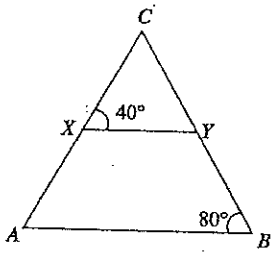
Name _____

GEOMETRY

NO WORK = NO CREDIT

4. In the figure below, X and Y lie on the sides of $\triangle ABC$, and $\overline{XY}$ is parallel to $\overline{AB}$. What is the measure of $\angle C$?

DO YOUR FIGURING HERE.



F. 120°
G. 90°
H. 80°
J. 60°
K. 40°

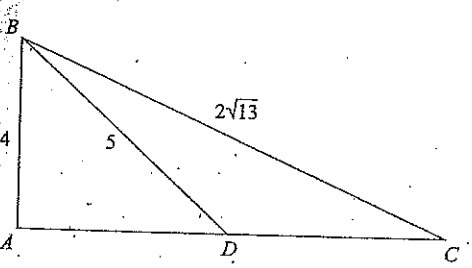
5. $\triangle ABC$ is similar to $\triangle XYZ$. AB is 5 inches long, BC is 8 inches long, and AC is 3 inches long. If the longest side of $\triangle XYZ$ is 20 inches long, what is the perimeter, in inches, of $\triangle XYZ$?

A. 16
B. 28
C. 40
D. 64
E. 88

6. A car leaves a parking lot and travels directly north for 6 miles. It then turns and travels 8 miles east. How many miles is the car from the parking lot?

F. 6
G. 8
H. 10
J. 14
K. 68

7. In the figure below, the lengths of the sides of triangle BAC are as shown. $\overline{BD}$ bisects side $\overline{AC}$. What is the length of DC?



A. $\sqrt{3}$
B. 2
C. 3
D. $2\sqrt{5}$
E. 4

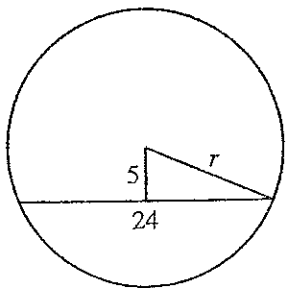
Name _____

GEOMETRY

NO WORK = NO CREDIT

DO YOUR FIGURING HERE.

8. A chord 24 inches long is 5 inches from the center of a circle, as shown below. What is the radius of the circle to the nearest tenth of an inch?

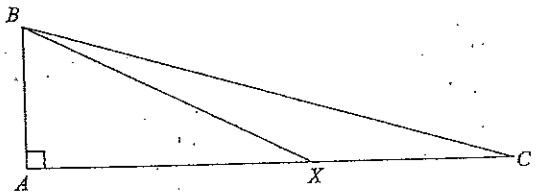


F. 29.0
G. 24.5
H. 16.9
J. 13.0
K. 10.9

9. In an isosceles right triangle, the hypotenuse is 12. What is the length of one (1) of the sides?

F. $6\sqrt{2}$
G. $2\sqrt{6}$
H. $2\sqrt{4}$
J. $2\sqrt{3}$
K. $\sqrt{3}$

10. In the figure below, triangles ABC and ABX are both right triangles. If the length of $\overline{AB}$ is 6 units, the length of $\overline{BX}$ is 10 units, and the length of $\overline{XC}$ is 4 units, what is the length of $\overline{BC}$?



A. $\sqrt{11}$
B. $2\sqrt{3}$
C. $2\sqrt{10}$

D $2\sqrt{35}$
E. 6.05

11. In $\triangle ABC$, $AB \cong AC$ and the measure of $\angle B$ is 34°. What is the measure of $\angle A$?

A. 34°
B. 56°
C. 68°
D. 73°
E. 112°

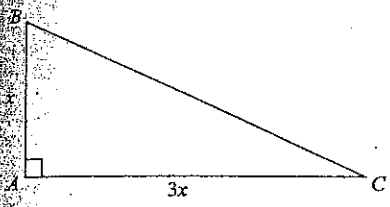
Name _____

GEOMETRY

NO WORK = NO CREDIT

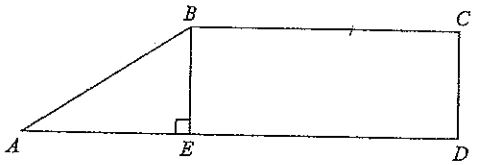
DO YOUR FIGURING HERE.

12. In the figure below, ΔABC is a right triangle with legs that measure x and $3x$ inches, respectively. What is the length, in inches, of the hypotenuse?



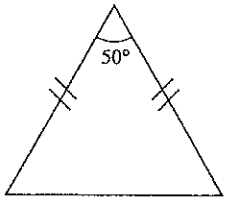
F. $\sqrt{10x}$
G. $\sqrt{3x}$
H. $\sqrt{2x}$
J. $2x$
K. $1x$

13. In the figure shown below, $AD = 16$, $ED = 11$, and AE is congruent to CD. What is the length of AB?



F. 5
G. $5\sqrt{2}$
H. 6
J. $11\sqrt{2}$
K. 25

14. The isosceles triangle below has one angle measure as shown. What is the measure of each of the other angles?



F. 30°
G. 45°
H. 50°
J. 65°
K. 130°

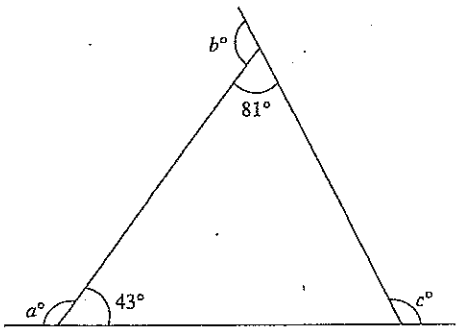
Name _____

GEOMETRY

NO WORK = NO CREDIT

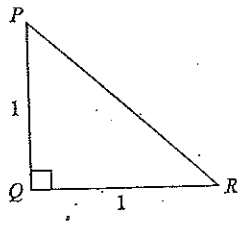
15. Given the triangle shown below with exterior angles that measure $a°$, $b°$, and $c°$ as shown, what is the sum of a, b, and c?

DO YOUR FIGURING HERE.



F. 180
G. 236
H. 261
J. 360
K. Cannot be determined from the given information

16. In the figure below, triangle PQR is an isosceles right triangle. What is the ratio of the hypotenuse to the length of PQ?



F. $\frac{\sqrt{2}}{2}$:1
G. $\frac{\sqrt{3}}{3}$:1
H. $\sqrt{2}$:1
J. $\sqrt{3}$:1
K. $2\sqrt{2}$:1

Length

Name _____

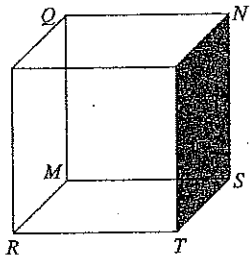
GEOMETRY

NO WORK = NO CREDIT

1. If a board 9 feet 6 inches in length is cut into 2 equal parts, what will be the length of each part?
   A. 3 feet 8 inches
   B. 4 feet 5 inches
   C. 4 feet 8 inches
   D. 4 feet 9 inches
   E. 5 feet 2 inches

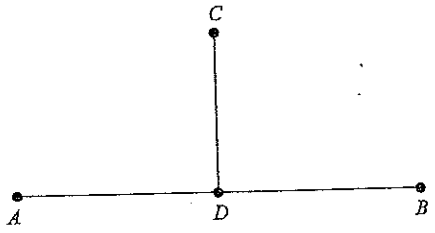
DO YOUR FIGURING HERE.

2. On the cube in the figure shown below, each of the following points is the same distance from R as it is from S EXCEPT:



A. M
B. O
C. T
D. Q
E. N

3. In the figure below, D is a point on segment AB, and the segment CD is perpendicular to the segment AB. Based on this information, which of the following conclusions can be made?



A. Point C is equidistant from A to B.
B. Segments AD and DB are equal in length.
C. The segment CD bisects the segment AB.
D. Angle CDA is larger than angle CDB.
E. Angle CDA is congruent to angle CDB.

4. Points B and C lie on segment AD as shown below. Segment AD is 32 units long, segment AC is 23 units long, and segment BD is 27 units long. How many units long, if it can be determined, is segment BC?

A. 21
B. 18
C. 9
D. 4
E. Cannot be determined from the given information.

Quadrilaterals

Name _____

GEOMETRY

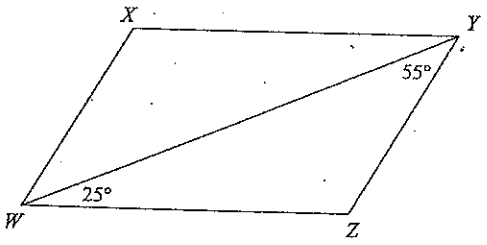
NO WORK = NO CREDIT

DO YOUR FIGURING HERE.

1. Rectangle $PQRS$ lies in the standard (x, y) coordinate plane so that its sides are not parallel to the axes. What is the product of the slopes of all four sides of rectangle $PQRS$?
   F. -2
   G. -1
   H. 0
   J. 1
   K. 2

2. Three vertices of a rectangle in the standard (x,y) coordinate plane have the coordinates $(-2,3)$, $(4,3)$ and $(4,2)$. What are the coordinates of the fourth vertex?
   A. $(-2,-2)$
   B. $(3,-3)$ E. (-2, 2)
   C. $(-3,3)$
   D. $(2,-2)$

3. In the parallelogram below, what is the measure of $\angle WXY$?



   F. 25°
   G. 55°
   H. 65°
   J. 100°
   K. 120°

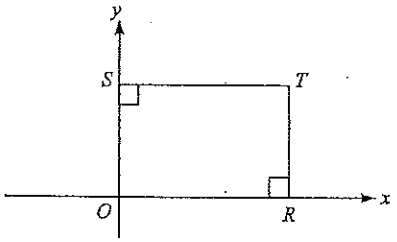
4. In the standard (x, y) coordinate plane, if a square has the vertices $(-2,-3)$, $(2,-3)$, and $(2,1)$, what is the set of coordinates for the final vertex?
   F. $(2,-1)$
   G. $(1,-2)$
   H. $(-1,2)$
   J. $(-2,-1)$
   K. $(-2,1)$

Name _____

GEOMETRY

NO WORK = NO CREDIT

DO YOUR FIGURING HERE.

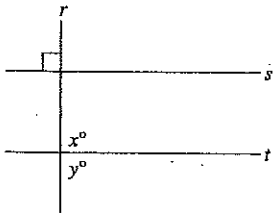


5. In the figure above, $OS = ST$ and the coordinates of T are $(k,5)$. What is the value of k?

F. -5
G. -3
H. -2
J. 0
K. 5

In the figure shown below, $s \perp r$ and $x > 90$. Which of the following *must* be true?

6.



A. $s \parallel t$
B. $r \perp t$
C. $y = 90$
D. $y > 90$
E. $y < 90$

Circles

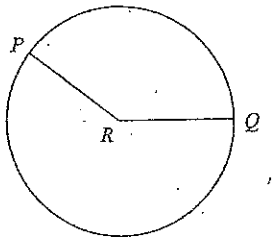
Name _____

GEOMETRY

NO WORK = NO CREDIT

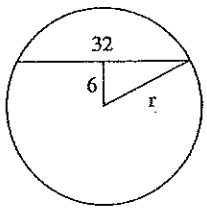
DO YOUR FIGURING HERE.

1. In the figure below, P and Q lie on the circle R, which has a radius of 9. If the angle PRQ is 120°, what is the area of sector PRQ?



A. 3π
B. 9π
C. 27π
D. 81π
E. 243π

2. A chord 32 centimeters long is 6 centimeters from the center of a circle, as shown below. What is the radius of the circle, to the nearest tenth of a centimeter?



F. 5.3
G. 13.9
H. 17.1
J. 26.0
K. 38.0

3. The length of arc XY of a circle is equal to $\frac{1}{6}$ of the circumference of the circle. The length of the arc is 7π inches. What is the radius, in inches, of the circle?

F. 42
G. 21
H. 14
J. 7
K. 3

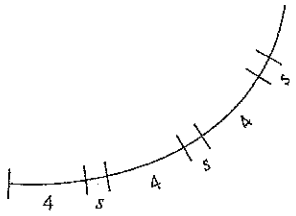
Name _____

GEOMETRY

NO WORK = NO CREDIT

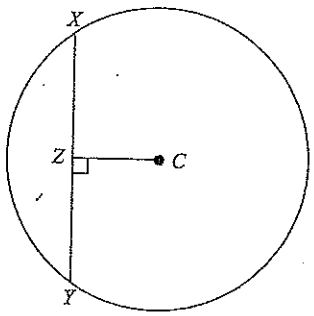
4. The figure below shows part of a circle whose circumference is 40. If arcs of length 4 and length s continue to alternate around the entire circle so that there are 8 arcs of each length, what is the degree measure of each of the arcs of length s?

DO YOUR FIGURING HERE.



F. 6°
G. 9°
H. 12°
J. 18°
K. 36°

5. The circle shown below has a radius of 5 meters, and the length of chord XY is 8 meters. If C marks the center of the circle, what is the length, in meters, of segment CZ?



A. $2\sqrt{3}$
B. 3
C. $\sqrt{13}$
D. 5
E. 9

6. Which of the following expresses the number of miles a runner must travel in a 4-lap race where the course is a circle of radius m miles?

F. $4m$
G. $4\pi m$
H. $4\pi m^2$
J. $8\pi m$
K. $16\pi m$

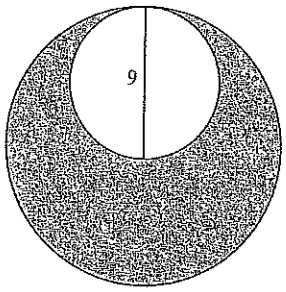
Name _____

GEOMETRY

NO WORK = NO CREDIT

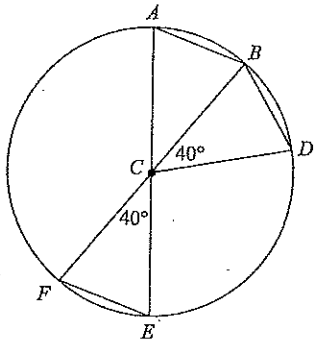
7. The figure below shows 2 tangent circles such that the 9-inch diameter of the smaller circle is equal to the radius of the larger circle. What is the approximate area, in square inches, of the shaded region?

DO YOUR FIGURING HERE.



A. 28.27
B. 56.55
C. 63.62
D. 190.74
E. 254.47

8. In the circle shown below, C is the center and lies on segments $\overline{AE}$ and $\overline{BF}$. Which of the following statements is NOT true?



F. $\angle BAC$ measures 70°
G. $\overline{AB}$ is parallel to $\overline{EF}$
H. $\overline{AB} \cong \overline{BD}$
J. $\angle BCE \cong \angle DCF$
K. $\overline{CF} \cong \overline{EF}$

9. Jason has been hired to build a circular wading pool in his neighbor's backyard. The rectangular backyard measures 60 feet wide by 50 feet long. Jason's neighbors want the pool to be as large as possible, with the edge of the pool at least 8 feet from the edge of the backyard all around. How long should the radius of the pool be, in feet?

A. 8
B. 17
C. 22
D. 34
E. 44

Name _____

GEOMETRY

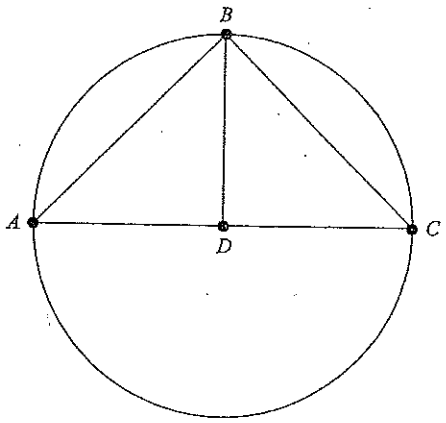
NO WORK = NO CREDIT

DO YOUR FIGURING HERE.

10 The City Council has approved the construction of a circular pool in front of City Hall. The area available for the pool is a rectangular region 12 feet by 18 feet, surrounded by a brick wall. If the pool is to be as large as possible within the walled area, and edge of the pool must be at least 2 feet from the wall all around, how many feet long should the radius of the pool be?

A. 14
B. 10
C. 7
D. 5
E. 4

11. In the figure below, AC is the diameter of the circle, B is a point on the circle, AB is congruent to BC, and D is the midpoint of AC. What is the degree measure of angle ABD?



A. 30°
B. 45°
C. 60°
D. 90°
E. Cannot be determined from the given information

Angles

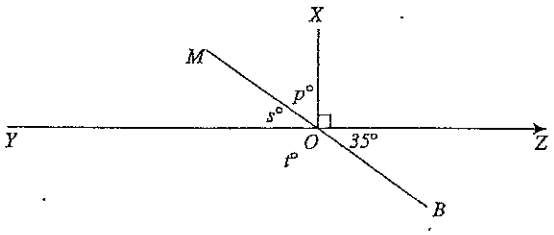
Name _____

GEOMETRY

NO WORK = NO CREDIT

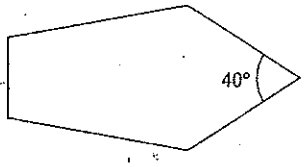
1. In the figure shown below, $\overline{YZ}$ and $\overline{MB}$ intersect at O and $\overline{XO}$ is perpendicular to $\overline{YZ}$. What is the value of $3p + 4s - 2t$?

DO YOUR FIGURING HERE.



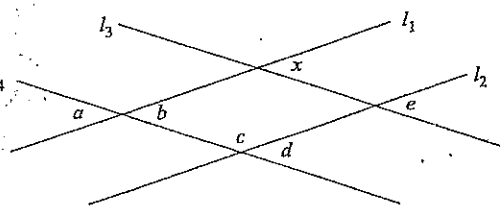
F. 15°
G. 35°
H. 55°
J. 135°
K. 150°

2. In the pentagon, shown below, one interior angle measures 40°. What is the total measure of the other 4 interior angles?



A. 120°
B. 160°
C. 320°
D. 500°
E. 680°

3. In the figure below, l_1 is parallel to l_2, and l_3 is parallel to l_4. Which of the following angles is NOT equal to angle x?



A. a
B. b
C. c
D. d
E. e

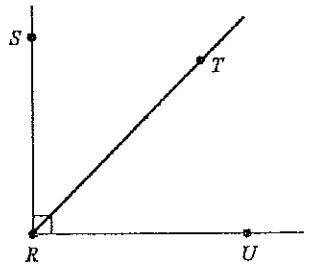
Name _____

GEOMETRY

NO WORK = NO CREDIT

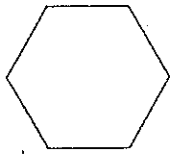
4. In the figure shown below, the measure of $\angle SRT$ is $(x+15)°$ and the measure of $\angle SRU$ is 90°. What is the measure of $\angle TRU$?

DO YOUR FIGURING HERE.



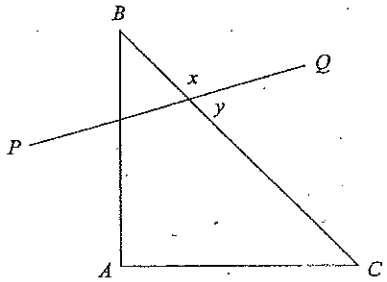
F. $(105+x)°$
G. $(105-x)°$
H. $(75+x)°$
J. $(75-x)°$
K. $(x-75)°$

5. The figure below is a regular hexagon. What is the measure of one of the interior angles of the hexagon?



F. 108°
G. 120°
H. 135°
J. 150°
K. 720°

6. In the figure below, triangle ABC is a 30–60–90 right triangle. If angle x measures 125°, what is the measure of angle y?



F. 35°
G. 45°
H. 55°
J. 70°
K. 90°